

Page 13 of 20

## **Remarks**

### **Specification**

The Examiner requested that Applicant check the lengthy specification and correct any detected errors.

Applicant has proofread the entire specification including the claims and corrected errors found in the claims.

### **Claim Objections**

Claims 5 and 17 are objected to because of the use the phrase "adapted to", which is not a positive recitation.

Applicant has replaced the phrase "adapted to" in claims 5 and 17 with respective positive recitations. It is therefore respectfully requested that the objections be withdrawn.

### **Claim Rejections – 35 U.S.C. § 102**

Claims 1, 29, 2-23, 30, 31, 37-40 are rejected under 35 U.S.C. 102(b) as being anticipated by Jeffrey *et al.* (U.S. Patent 5,544,168).

**Regarding claims 1, 12, and 29**, the Examiner states that Jeffrey discloses a circulating switch (FIG. 8 and FIG. 10b in Jeffrey) comprising:

- (a) a plurality of switch modules, and
- (b) a temporal cyclical rotator having a plurality of inlets and a plurality of outlets,

where each inlet connects to each switch module and each outlet connects to each switch module, and

where the temporal cyclical rotator connects each switch module to each other switch module.

Applicant respectfully submits that claim 1 describes a circulating switch exemplified in FIG. 4 of the present application which comprises a single rotator and a plurality of switch modules. The switch illustrated in Figures 8 and 10b in Jeffery comprises 8 parallel planes one for control and seven for data transfer. Each plane comprises:

- (1) 16 input rotators;
- (2) 16 central switches, and
- (3) 16 output rotators.

The Examiner equates the plurality of switch modules 422 (FIG. 4) of the present application with the central switches in Jeffery.

### **Claim 1**

Some of the differences between the circulating switch of claim 1 and the switch in Jeffery are listed below:

- (A) Claim 1 describes a circulating switch which comprises a single plane. The switch exemplified in FIG. 8 in Jeffery comprises at least two planes, because one plane is needed for control.
- (B) Claim 1 recites "one and only one temporal cyclical rotator having a plurality of inlets and a plurality of outlets". This indicates a single temporal cyclical rotator. Thus the circulating switch functions with a single rotator. In a sharp contrast, each plane in the switch of FIG. 8 in Jeffery has multiple input rotators and multiple output rotators. If the number of rotators in Jeffery is reduced to one, there would be no path from any input port to any output port thus rendering the device unusable

as a switch.

- (C) Claim 1 recites "where said plurality of inlets is communicatively connected to said plurality of switch modules and said plurality of outlets is communicatively connected to said plurality of switch modules". According to FIG. 8 in Jeffrey, and the corresponding description, each inlet of each input rotator connects to a respective input port and each outlet of each output rotator connects to a respective output port. Thus, none of the *inlets* of any input rotator in Jeffrey connects to a central switch and none of the *outlets* of any output rotator connects to a central switch; the Examiner has equated a central switch in Jeffrey to a switch module in the present application.
- (D) Claim 1 recites "where said temporal cyclical rotator cyclically connects each switch module to each other switch module". There are 16 rotators in each plane in the exemplary switch of FIG. 8 in Jeffrey. NONE of the rotators connects any central switch (switch module) to any other central switch. The structure of FIG. 8 in Jeffrey does not provide ANY PATH – DIRECT OR INDIRECT - FROM ANY CENTRAL SWITCH TO ANY OTHER CENTRAL SWITCH.

There are numerous other structural and functional differences between the novel circulating switch of the present application and the convention three-stage structure in Jeffrey.

Clearly, there is no resemblance whatsoever between the claimed circulating switch and the conventional switch in Jeffrey. For at least the reason that Jeffrey does not disclose the main limitation of claim 1 regarding a SINGLE rotator cyclically connecting each switch module to each other switch module, it is respectfully requested that the rejection of claim 1 be withdrawn.

Page 16 of 20

**Claim 12**

Claim 12 has been cancelled.

**Claim 29**

Claim 29 has been cancelled.

**Claims 2-11, 13-23, 30, 31, 37, 38**

Claims 2-11 depend, directly or indirectly, from claim 1 and therefore, for the reasons given in respect of claim 1, it is submitted that these claims patentably define over Jeffrey.

Claims 13, 14, 16, 21, and 22 have been amended to depend on claim 24. Thus, claims 13 to 22 depend, directly or indirectly, from claim 24, the patentability of which is asserted hereinafter. For the reasons given hereinafter in respect of claim 24, it is submitted that claims 13-22 patentably define over Jeffrey.

Claims 23, 30, and 31 have been cancelled.

Claims 37 and 38 have been amended to depend from claim 32, the patentability of which is asserted hereinafter. For the reasons given hereinafter in respect of claim 32, it is submitted that these claims patentably define over Jeffrey.

**Claim 39**

Regarding claim 39, the Examiner states that Jeffrey discloses a method of adding a new switch module to a circulating switch having a plurality of switch modules that exchange data segments through an array of temporal cyclical rotators. The Examiner refers to column 2:42-53 recited below:

"According to the present invention there is provided an ATM telecommunications switch comprising a plurality of parallel data switching planes and a parallel control plane, each plane having an equal number of input ports and output ports and a central switching unit to switch each input port to any output port, including means to divide a single data stream between a plurality of input ports. Preferably the switch comprises rotator means to connect each input port cyclically to each timeslot of the central switching unit and a second rotator means to connect each timeslot of the central switching unit cyclically to each output port".

Applicant submits that the above passage in column 2:42-53 describes a switch without discussing a process of adding a new central switch (switch module).

The Examiner further states that Jeffrey discloses "scheduling an exchange of said data segments through said temporal cyclical rotators while excluding from consideration a selected one of said temporal cyclical rotators". The Examiner refers to the passage spanning column 2:57-67 and column 3:1-8 recited below:

"a) The switch uses variable cell routing, finding a path across the core for each cell as it arrives. The timing across the core is a constant, this ensures that cell sequence integrity is maintained. The variable cell routing allows dynamic bandwidth changes and helps to ensure low cell loss rates.

b) The switch sends each cell in 7 parallel streams of 64 bits ( $7 \times 8 = 56$  octets), managed by a control stream.

c) The switch is entirely deterministic with the logic operating in parallel at comparatively low speeds compared with the external interfaces. This allows 600M and higher rate external interfaces to be supported without requiring 600M technology. The deterministic operation allows easy fault finding and fast changeover for 1:1 and 1:N redundant ports.

d) The switch behaves as a single stage switch (with some additional

fixed delay), this gives it very low cell loss rates, low jitter, and low delay."

Applicant notes that the above passage (column 2:57 to column 3:8) does not mention or imply excluding from consideration any rotator. A rotator in Jeffrey connects to a community of users; hence excluding a rotator isolates a respective community of users. In contrast, a rotator in the circulating switch of FIG. 36 or FIG. 37 does not interface with users; hence the claimed circulating switch has the flexibility to exclude a number of rotators without isolating a single user.

The Examiner further states that Jeffrey discloses "extending a rotation configuration of a selected one of said temporal cyclical rotators of said array". The Examiner refers to the passages on column 3:16-19, recited below, and column 12:34-60.

Col. 3:16-19: "The switch grows through a number of configurations from small switches of 16 ports to well over 10,000 ports. Growth from one configuration to another may be achieved without loss of existing or new calls."

The growth strategy in Jeffrey is clearly described in fine detail section 8 of US 5,544,168, spanning column 12:19 to column 17:58. Please see Figures 10a, 10b, and 10c. In FIG. 10a, the entire switch comprises one central switch. In FIG. 10b, a first array of input rotators and a first array of output rotators are added to support more central switches. The configuration of FIG. 10b cannot expand beyond 16 central switches. To add more central switches, a second array of input rotators is interlaced with the first array of input rotators and a second array of output rotators is interlaced with the first array of output rotators as illustrated in FIG. 10c.

Applicant submits that the growth strategy in Jeffrey, as summarized above

Page 19 of 20

and detailed over several pages in US 5,544,168, is tailored to a conventional three-stage structure. The growth strategy in Jeffrey is clearly not applicable to the claimed circulating switch as depicted Figures 36 or 37 of the present application. Accordingly, for the reason that Jeffrey does not teach any of the steps of claim 39, it is respectfully requested that the rejection of claim 39 be withdrawn.

**Claim 40**

Claim 40 depends from claim 39 and therefore, for the reasons given in respect of claim 39, it is submitted that this claim patentably defines over Jeffrey.

**Allowable Subject Matter**

Applicant thanks the Examiner for the indication that claims 24-28 and 32-36 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 24 depends on claims 23 and 12. Applicant amended claim 24 to include all the limitations of claims 23 and 12. Claim 25 depends on claim 24 and is therefore believed to be allowable in view of the amendments. Claims 26, 27, and 28 depend, directly or indirectly, on claim 25, and are therefore believed to be allowable.

Claim 32 depends on claims 29, 30, and 31. Claim 32 has been amended to include the limitations of claims 29-31. Claims 33-36 depend, directly or indirectly, on claim 32, and are therefore believed to be allowable in view of the amendment.

**Conclusion**

Claims 1-11, 13-22, 24-28, 32-40 are pending. Claims 12, 23 and 29-31 have

been cancelled.

In view of the foregoing, early favorable consideration of the application is earnestly solicited.

Respectfully submitted,



---

Ronald Faggetter  
Registration No. 33,345

**SMART & BIGGAR**

438 University Avenue  
Suite 1500, Box 111  
Toronto, Ontario  
Canada M5G 2K8

Telephone: (416) 593-5514  
Facsimile: (416) 591-1690

July 16, 2008

92644-22 RDF:bw